

VAX 4000  
Model 500A/505A/600A/700A/705A

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Installation

Order Number: EK-493AB-IN. B01

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**First Edition, March 1990**  
**Seventh Edition, July 1994**

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**FCC NOTICE:** The equipment described in this manual generates, uses, and may emit radio frequency. The equipment has been type tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such radio frequency interference.

Operation of the equipment in a residential area may cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

**Warning:** The VAX 4000 Model 705A is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

**Achtung!** Der VAX 4000 Modell 705A ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Geräts Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

**Attention!** Le VAX 4000 modèle 705A est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.

S2578

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# 1 Verify Site Preparation

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## Caution

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Review your system warranty. It may require that a Digital service representative install your system to prevent damage to equipment or software.

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If you are installing a DSSI VAXcluster configuration, and you are a licensed self-maintenance customer, you should be familiar with the contents of your *DSSI VAXcluster Installation and Troubleshooting* manual.

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## Caution

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If you are installing a DSSI configuration, to prevent system performance degradation or data corruption caused by excessive ground offset voltages, make sure your site power distribution system does not have any of the grounding faults listed in your *Site Preparation* manual.


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The installation instructions that follow assume:

- Your site meets all the requirements listed in the system *Site Preparation* manual.
- All cables that you plan to connect to your system are in place and clearly labeled.
  - Terminal data cables?
  - Telephone cables?
  - Network cables?
- You have the following tools (not included in your shipment).
  - Scissors
  - Flat-blade screwdriver
  - Phillips (cross-point) screwdriver
  - Adjustable wrench
  - Voltmeter calibrated for millivolts

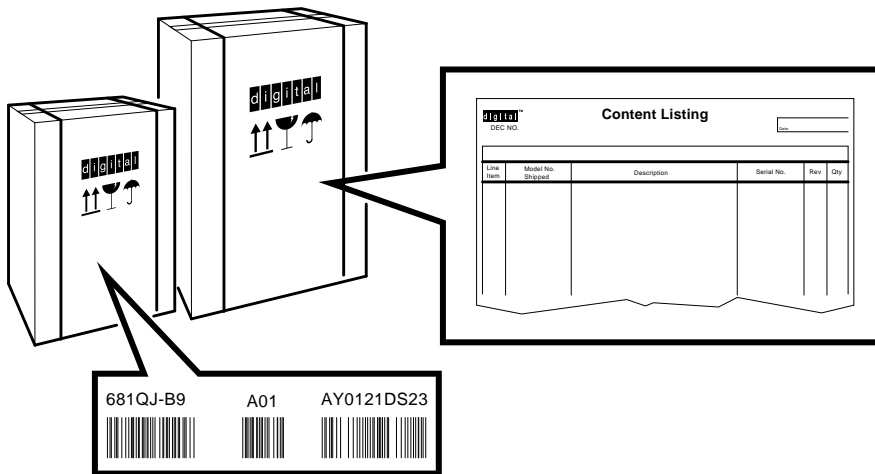
## 2 Check the Shipment

1. Find the Product Delivery Document. It is inside or attached to one of the shipping cartons.

		<b>Product Delivery Document</b>
Digital Equipment Corporation		Documentation Issue Date _____
Customer Order No. _____	Doc No. _____	Product Delivery No. _____
Shipped To _____	Invoice To _____	

MLO-007108

2. Make sure your shipment is complete by checking that each item listed as shipped on the Product Delivery Document appears on a Content Listing or on a Barcode Label on the outside of one of the cartons in your shipment.



MLO-010176

A Content Listing may also be attached to a smaller container (bag or box) packed inside a shipping carton.

3. Use the unpacking illustrations on the cartons as a guide to unpack your shipment.

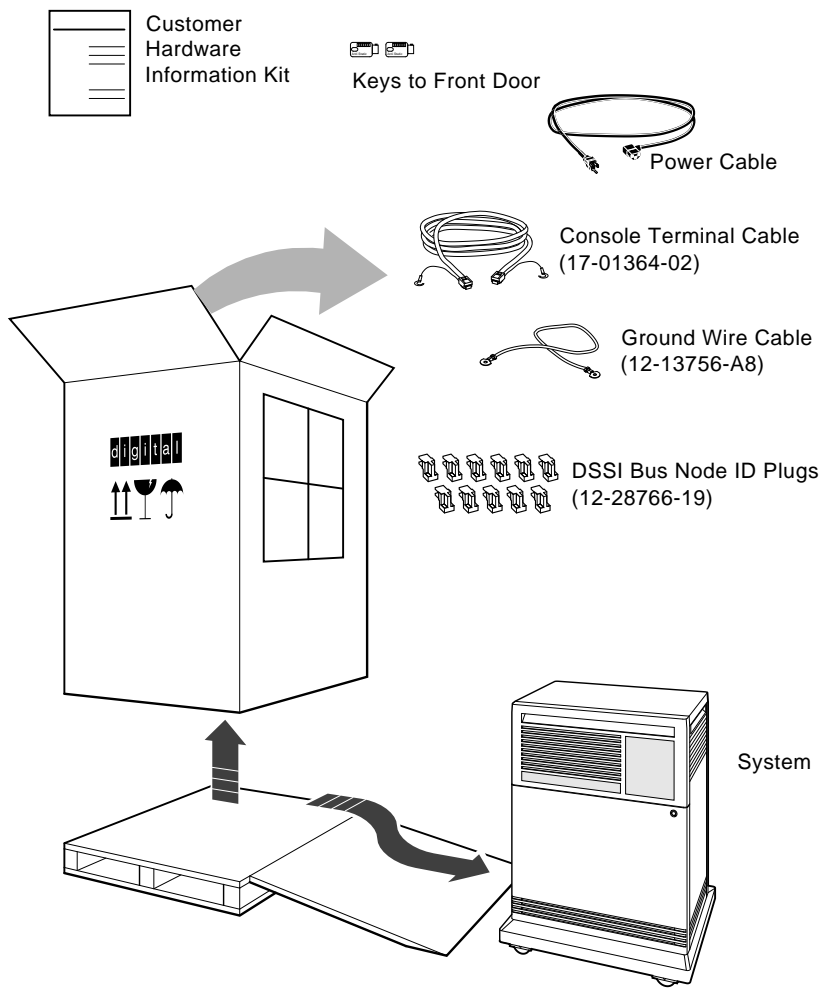
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**Warning**

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The system weighs 68 kilograms (150 pounds) with all options installed. To prevent personal injury, two or more people should move the system.

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MLO-007181

4. Check the contents of each carton against the Content Listing to ensure you received all items.



5. If any item is missing or damaged:  
    Contact your delivery agent.  
    Contact your Digital sales representative.

### 3 Position the System

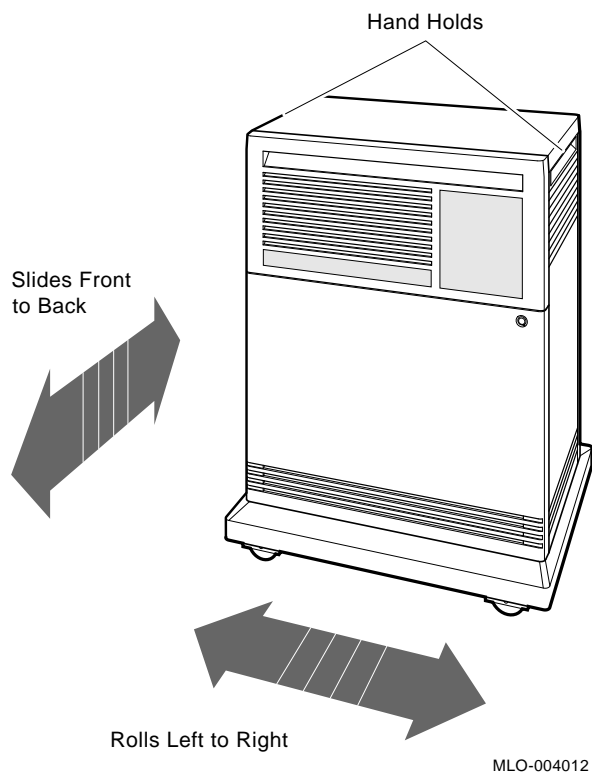
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#### Warning

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To prevent personal injury, do not use the handholds to lift the system.

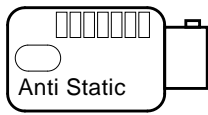
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For now, leave space behind the system for routing cables.

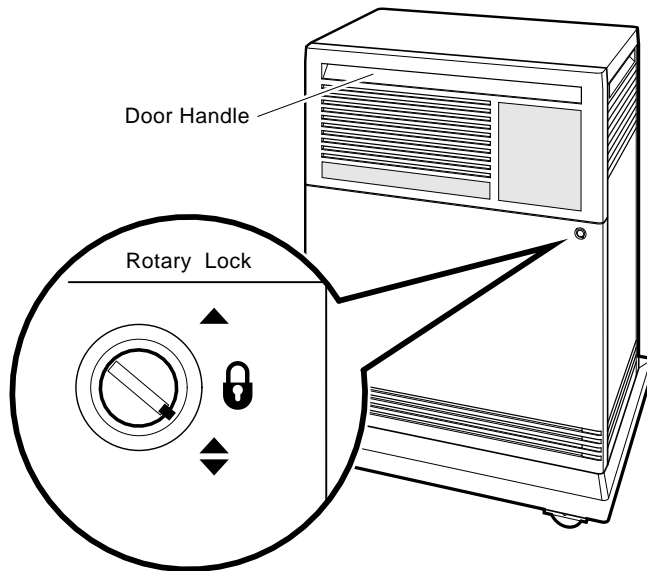
## 4 Open the System Doors

1. Find a key (two are provided).



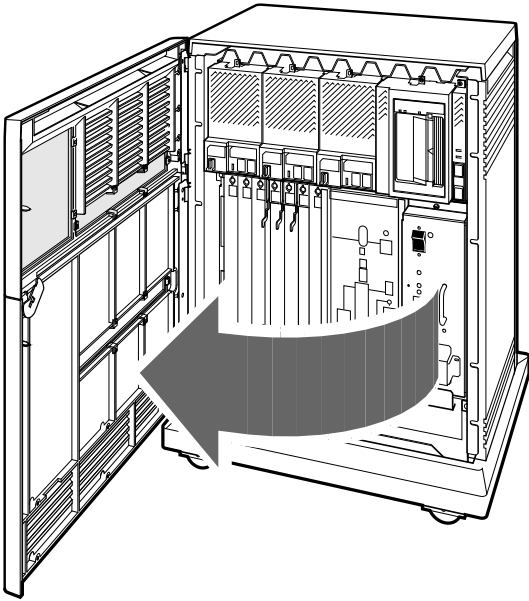
MLO-007110

2. Insert that key in the rotary lock, and turn it to the bottom position.



MLO-007111

3. Open the doors by pulling the handle on the upper door.



MLO-004013

4. Review the meaning of the following warning symbols which appear on the power supply.



Indicates a risk of electric shock.



To reduce the risk of injury, do not remove modules, Integrated Storage Elements (ISEs), the tape drive, or the power supply. No user-serviceable parts are inside. Refer servicing questions to your Digital service representative or to your licensed self-maintenance personnel.

## 5 Install the Console Terminal

1. Use the instructions in your terminal installation guide to connect the various parts of the terminal.
2. Turn on the terminal.
3. After the terminal passes its self-test, perform the setup operations.

Be sure to:

- Read all the applicable documentation provided with your terminal.
- Follow the setup instructions for your terminal.

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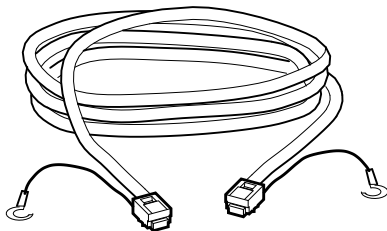
### Note

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A Digital terminal is shipped with the baud rate set to 9600. If you want to use that rate, you can ignore the baud rate setup instructions.

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4. Turn off the terminal.
5. Find the console terminal cable.



MLO-007112

6. Connect the terminal cable to the modular jack on the rear of the terminal, as described in your terminal installation guide.

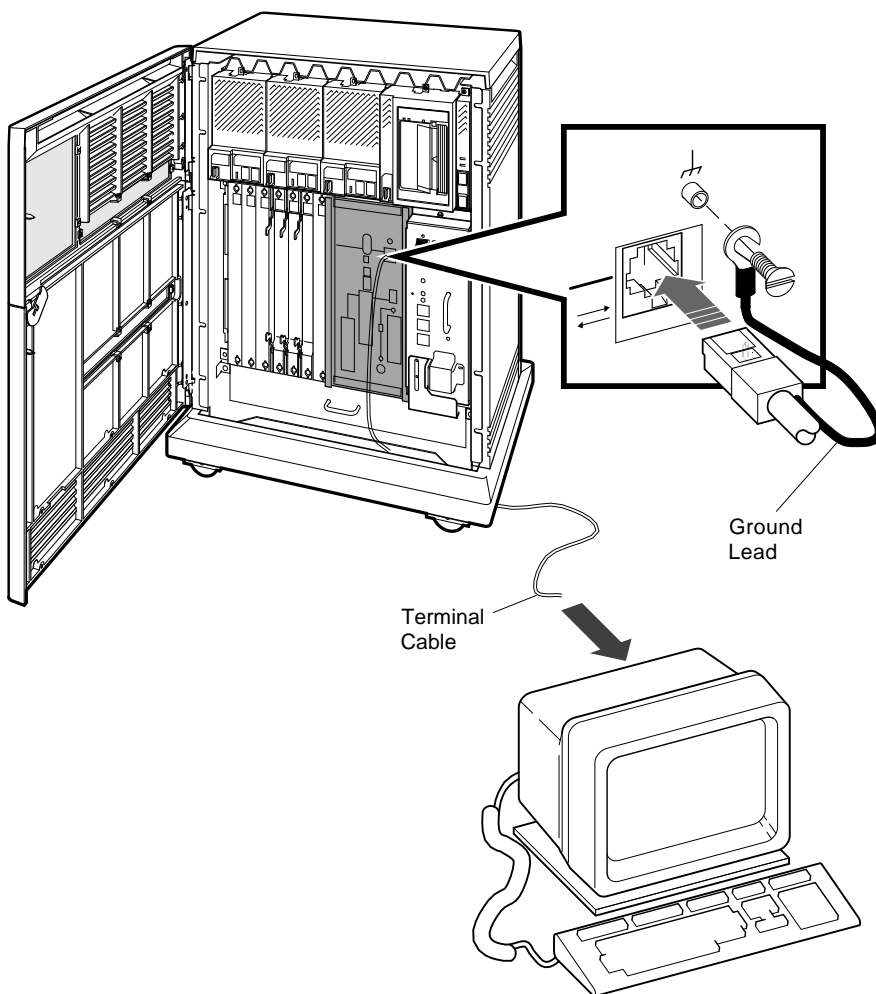
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**Note**

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Shading in this and subsequent illustrations indicates the general location of the connections you will make.

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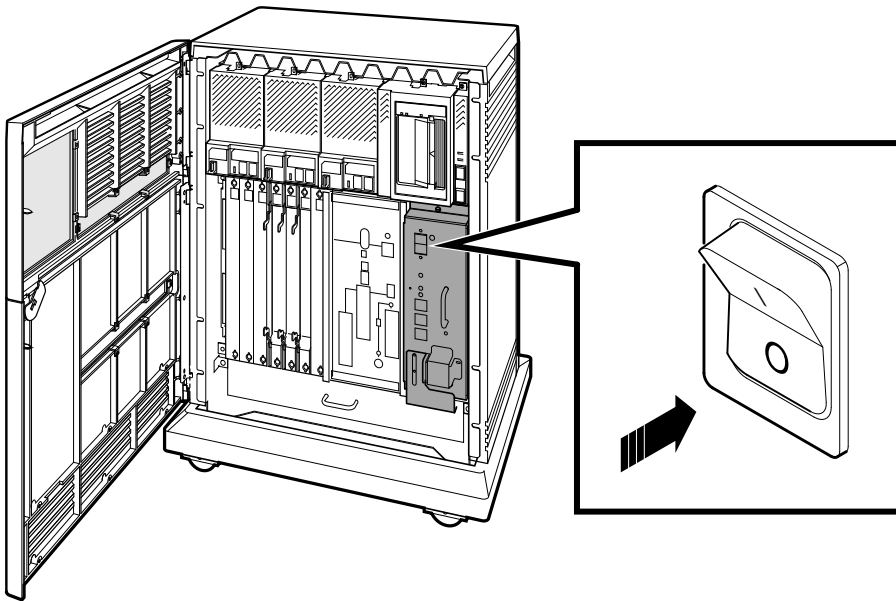


MLO-007182

7. Insert the terminal cable into the modular jack on the system console module, and connect the cable ground lead, as shown above.

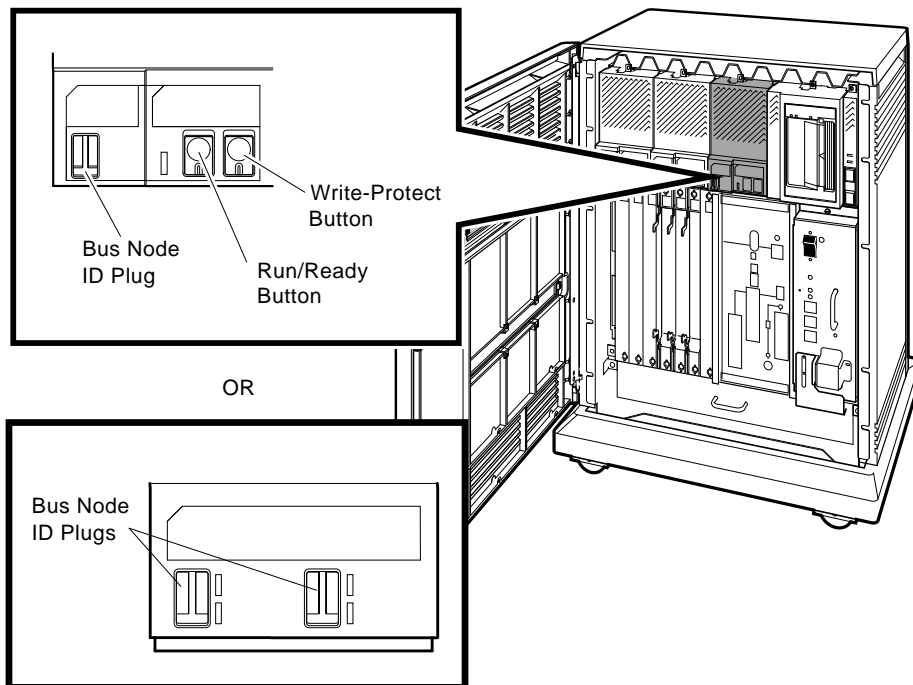
## 6 Set the System Controls

1. Check the setting of the Power switch on the power supply. It should be off (set at 0).



MLO-007113

2. Check the settings on each Integrated Storage Element (ISE):
- The Write-Protect button should be out (write-enabled position).
  - The Run/Ready button should be in (ready position).
  - Verify that uniquely numbered bus node ID plugs are inserted into the ISEs.



MLO-007702

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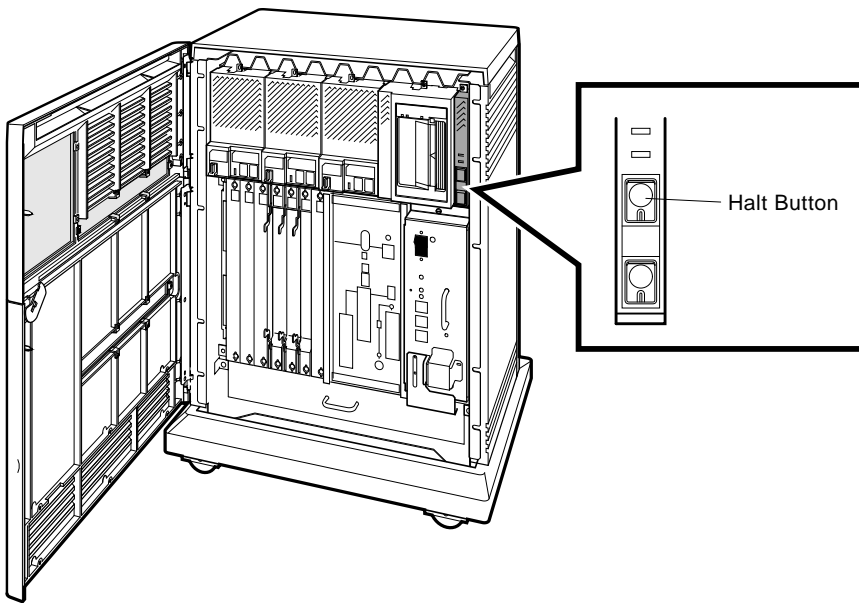
**Note**

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If a bus node ID plug is missing from an ISE, refer to your system *Operation* manual for corrective action.

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3. Check the setting of the Halt button on the system control panel. It should be out (run position).

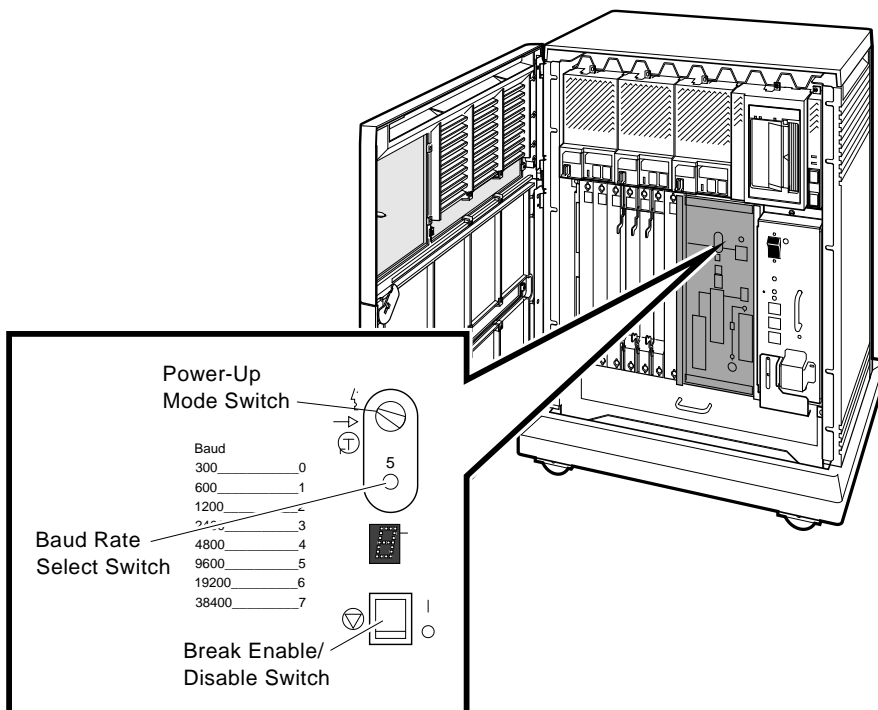


MLO-007115



4. Check the settings on the console module:

- The Power-Up Mode switch should be set to Language Inquiry (uppermost position, indicated by a human profile).
- The Baud Rate Select switch should be set to the same rate you used for your console terminal.
- The Break Enable/Disable switch should be set to break enabled (up, indicated by a  $\uparrow$ ).



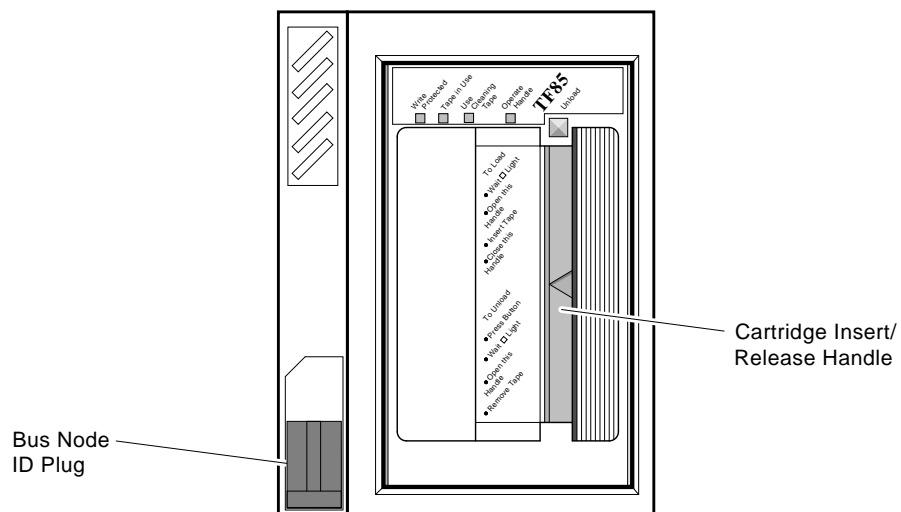
MLO-007116

5. Check the settings on the tape drive:

- If a TF-series tape drive is installed in your system:

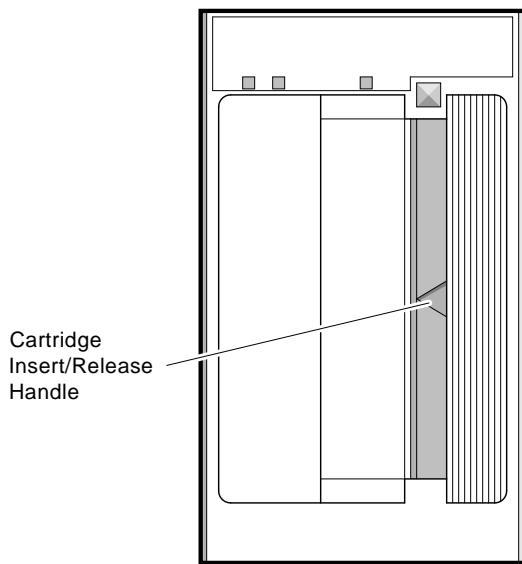
Make sure the Cartridge Insert/Release handle is closed (pushed in).

Verify that a bus node ID plug is inserted into the drive.



MLO-007171

- If a TK-series tape drive is installed in your system, make sure the Cartridge Insert/Release handle is closed (pushed in).



MLO-007180

## 7 Connect Additional Devices to the System

You can connect additional devices at this time, or you can complete the installation (go to Section 8) before connecting the devices.

- If you have devices that must be connected before you start up system software, connect them now.

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### CAUTION

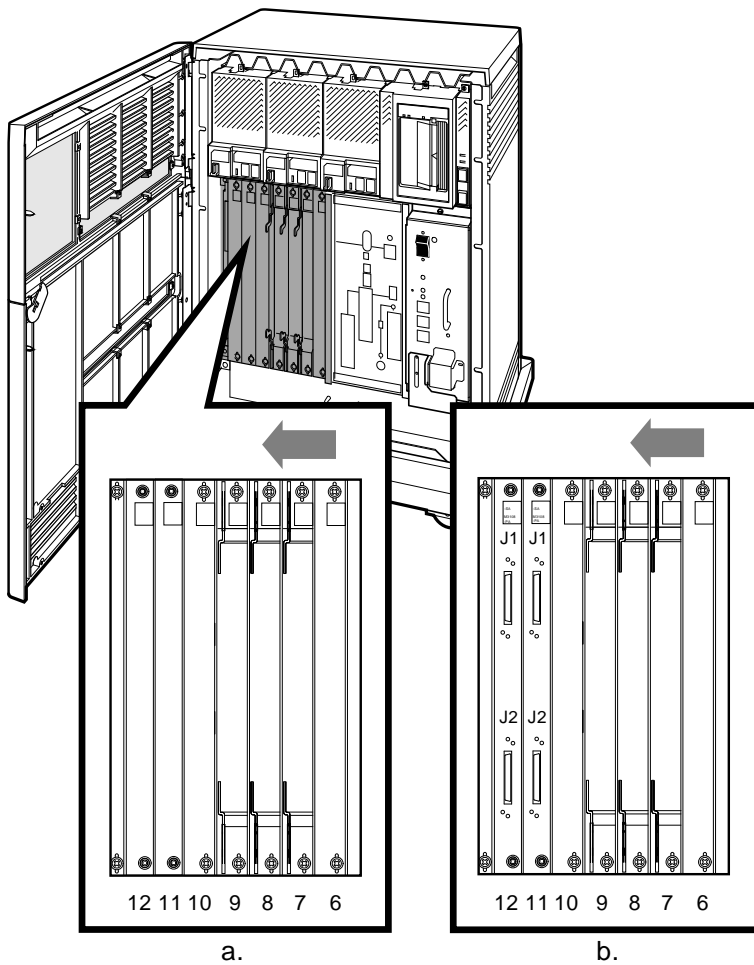
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To prevent damage to equipment or software, make sure the Power switch on the power supply panel is off (set at 0).

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Make all connections directly to the appropriate system module cover.

1. Begin with the module at the far right.

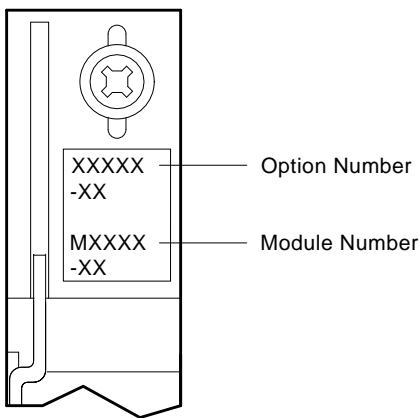


MLO-010175

2. As you complete connections for each module, move left to the next module.
  - a. If your system has two DSSI ports and looks like “a” in the above illustration, then slots 6 through 12 are available for Q-bus option modules.
  - b. If your system has four DSSI ports and looks like “b” in the above illustration, then slots 6 through 10 are available for Q-bus option modules and slots 11 and 12 are DSSI bus bulkheads.

Refer to Section 8 to connect the expander.

Each module cover has an identifying label at the top, which shows the option number and module number.



MLO-007118

The following sections tell you how to connect devices to the modules described in this manual. Connections to other modules are described in the device installation guides.

Section 7.1 — terminals and serial printers (CXA16 or CXB16 module)

Section 7.2 — parallel printers (LPV11 module)

Section 7.3 — synchronous modems (DSV11 module)

Section 7.4 — asynchronous modems (CXY08 module)

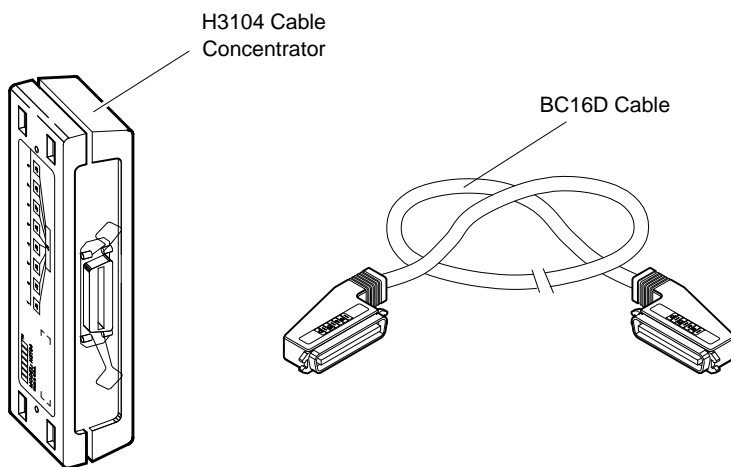
Section 7.5 — Ethernet device (H3604 console module)

Section 7.6 — Ethernet device (DESQA module)

## 7.1 Connecting Terminals and Serial Printers

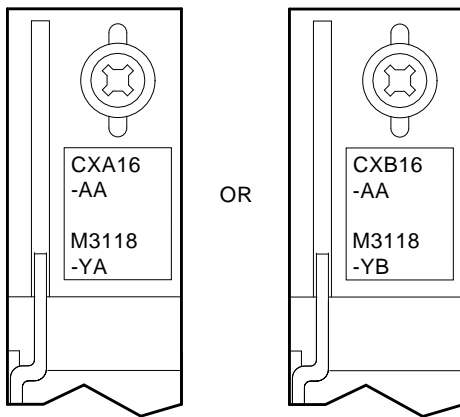
You can connect up to 16 terminals and/or serial printers for each CXA16 or CXB16 module installed in your system.

1. Find a cable concentrator and its cable.



MLO-007120

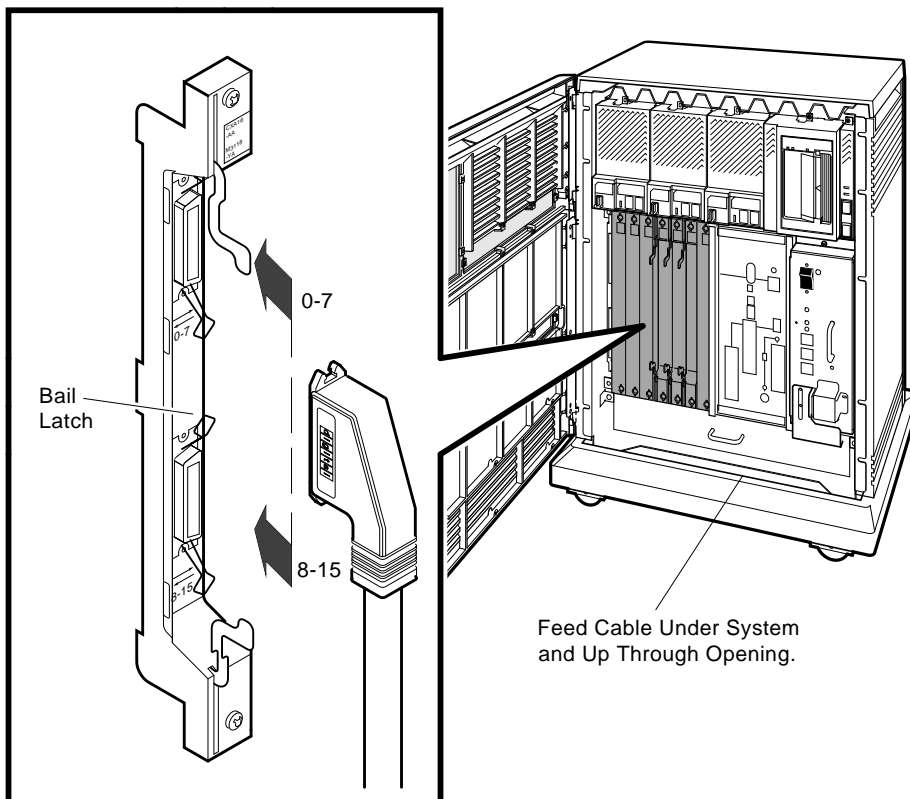
2. Find the CXA16 or CXB16 module.



MLO-007119

3. Insert the cable into a connector on the module.

- If you are connecting two cables, connect the first to the connector labeled 8–15 on the module cover.
- If you are connecting one cable, connect it to the connector labeled 0–7.

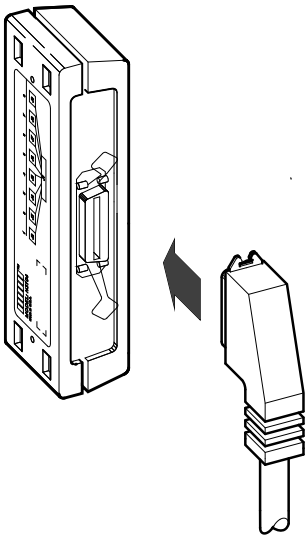


MLO-007121

Secure the connection by pressing the bail latches until they snap into place.



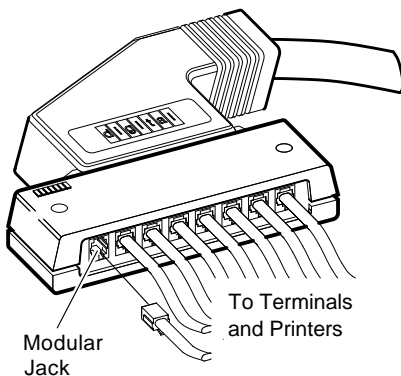
4. Insert the other end of the cable into the cable concentrator.



MLO-007122

Secure the connection by pressing the bail latches until they snap into place.

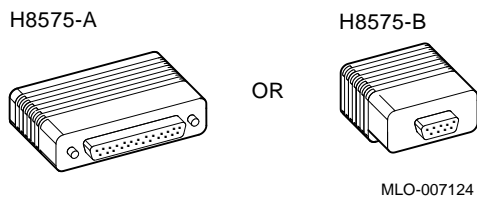
5. Insert each printer and terminal cable into one of the modular jacks on the cable concentrator.



MLO-007123

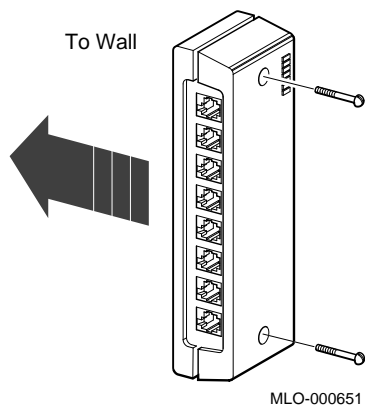
6. Make sure a terminal or printer is connected to the other end of each cable, as described in your terminal or printer documentation.

If the printer or terminal does not have a modular jack connection, use a passive adapter.



Follow the same procedure for connecting a second BC16D cable to the module, except insert the cable into the connector labeled 0–7.

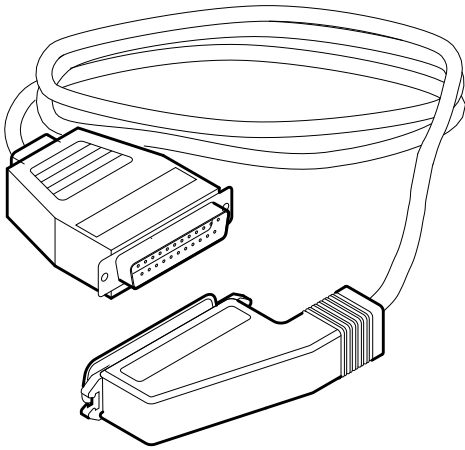
You can mount the cable concentrator on a wall.



## 7.2 Connecting Parallel Printers

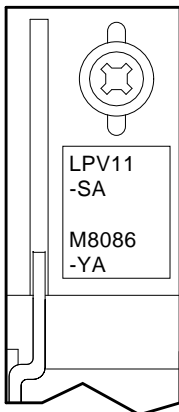
You can connect up to two parallel printers for each LPV11 module installed in your system.

1. Find a BC27L-30 cable.



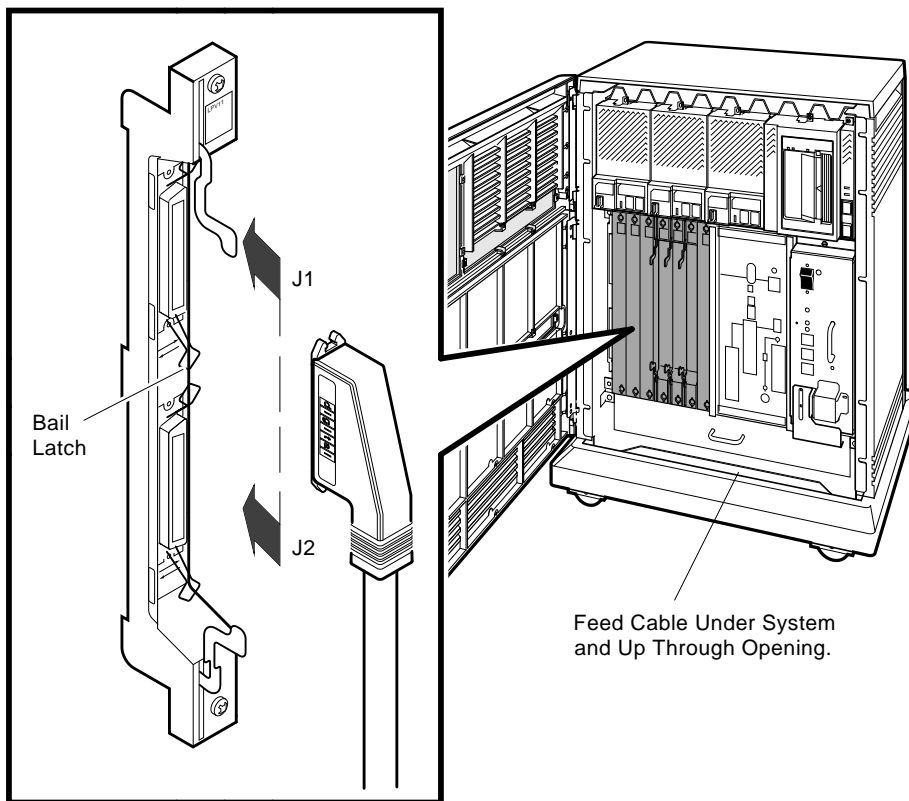
MLO-007126

2. Find the LPV11 module.



MLO-007125

3. Insert one end of the cable into the lower connector labeled J2 on the module.



MLO-007127

Secure the connection by pressing the bail latches until they snap into place.

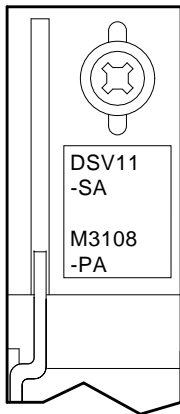
4. Insert the other end of the cable into the printer, as described in your printer documentation.

Follow the same procedure for connecting a second printer to the LPV11 module, except insert the cable into the upper connector labeled J1 on the module cover.

### 7.3 Connecting Synchronous Modems

You can connect up to two synchronous modems for each DSV11 module installed in your system.

1. Find the DSV11 module.

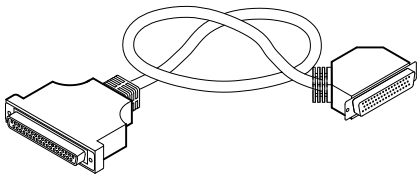


MLO-007128

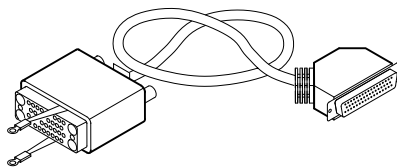
2. Find one of the following adapter-extension cable pairs.

Adapter Cables

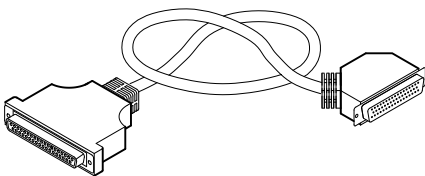
BC19E-02



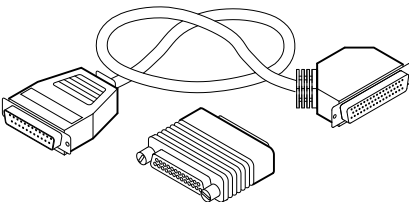
BC19F-02



BC19B-02

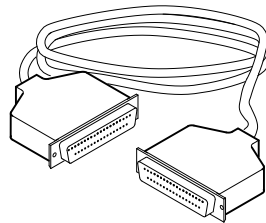


BC19D-02

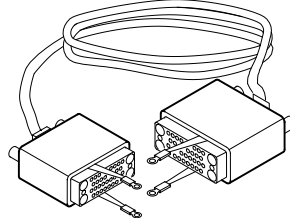


Extension Cables

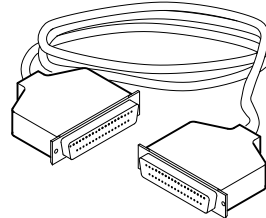
BC55D-25



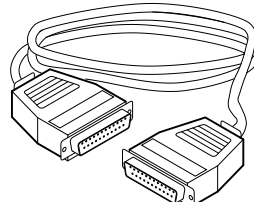
BC19L-25



BC55D-25

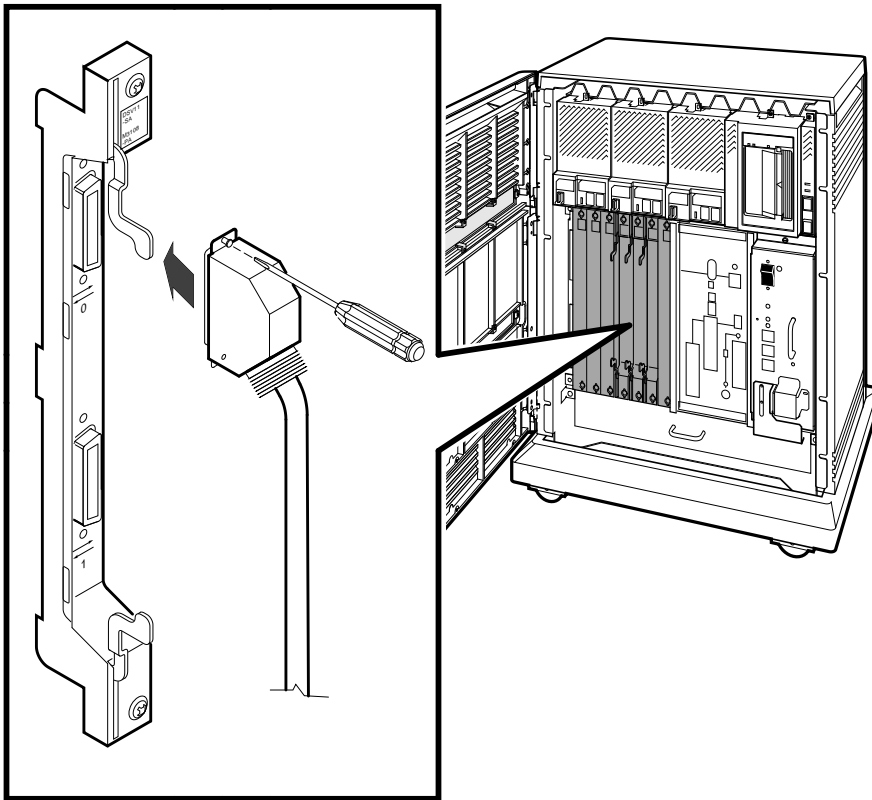


BC22F



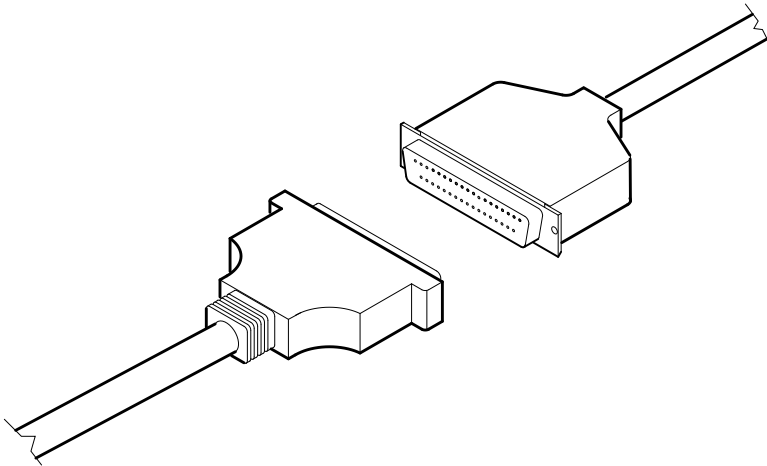
MLO-007129

3. Connect the socket end of the adapter cable to the module.



MLO-007130

4. Connect the extension cable to the other end of the adapter cable.



MLO-007132

If necessary, you can use 4–40 threaded standoffs and a screwdriver to secure the connection.

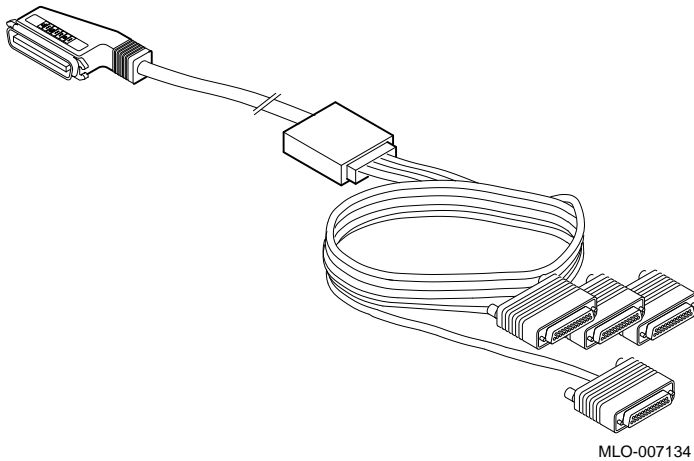
5. Connect the other end of the extension cable to the modem, as described in your modem documentation.



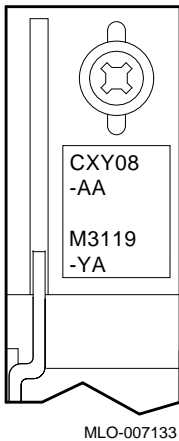
## 7.4 Connecting Asynchronous Modems

You can connect up to eight asynchronous modems to the CXY08 module.

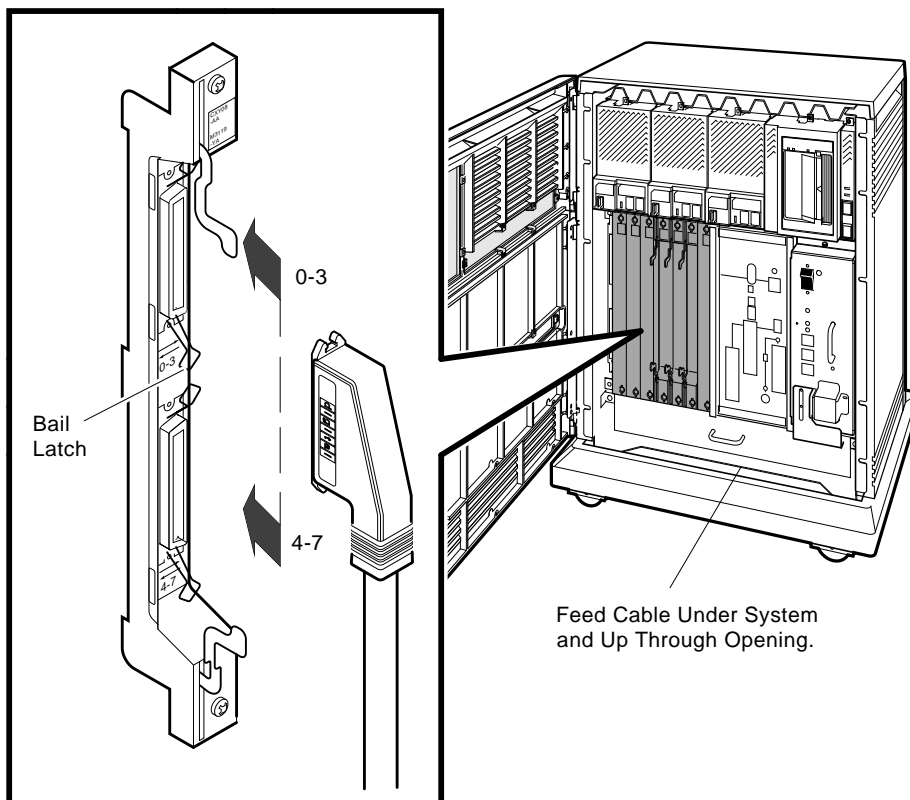
1. Find a BC19N-12 cable.



2. Find the CXY08 module.



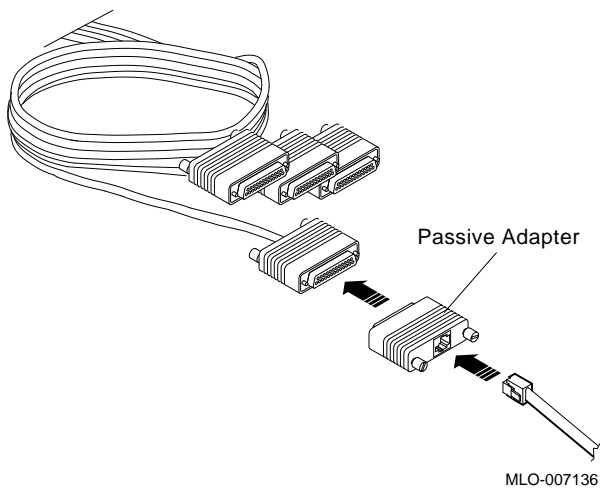
3. Insert the single-connector end of the cable into a connector on the module.
- If you are connecting two cables, connect the first to the connector labeled 4–7 on the module cover.
  - If you are connecting one cable, connect it to the connector labeled 0–3.



MLO-007135

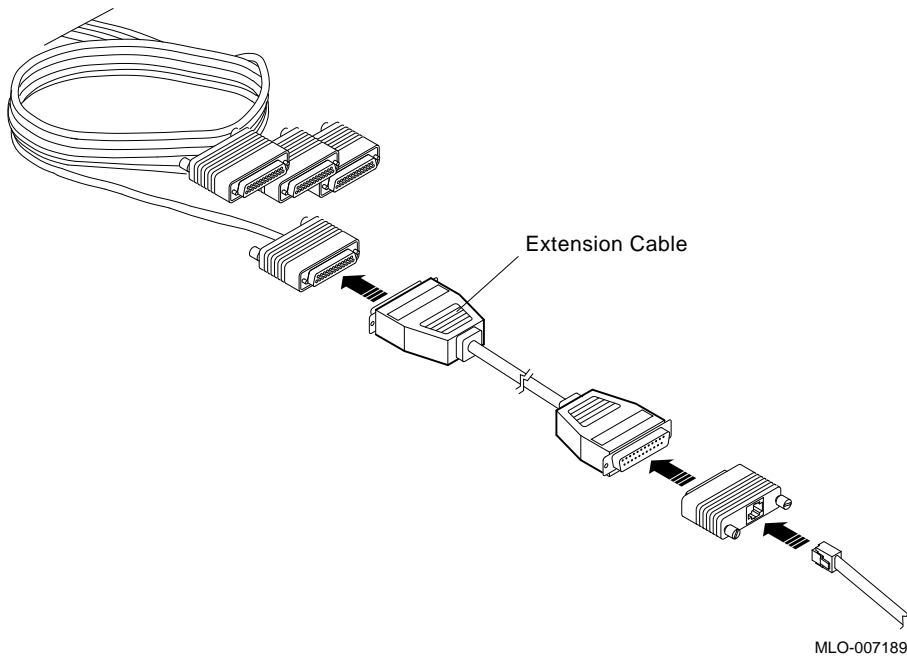
Secure the connection by pressing the bail latches until they snap into place.

4. Attach one to four modem cables to the four connectors on the opposite end of the BC19N-12 cable.



If necessary, you can use 4-40 threaded standoffs and a screwdriver to secure the adapter to the BC19N-12 cable.

If you want to place the modem farther away from the system, attach a BC22F extension cable between the BC19N-12 cable connector and the modem.



If necessary, you can use 4-40 threaded standoffs and a screwdriver to secure the BC19N-12 to BC22F connection and the BC22F to adapter connection.

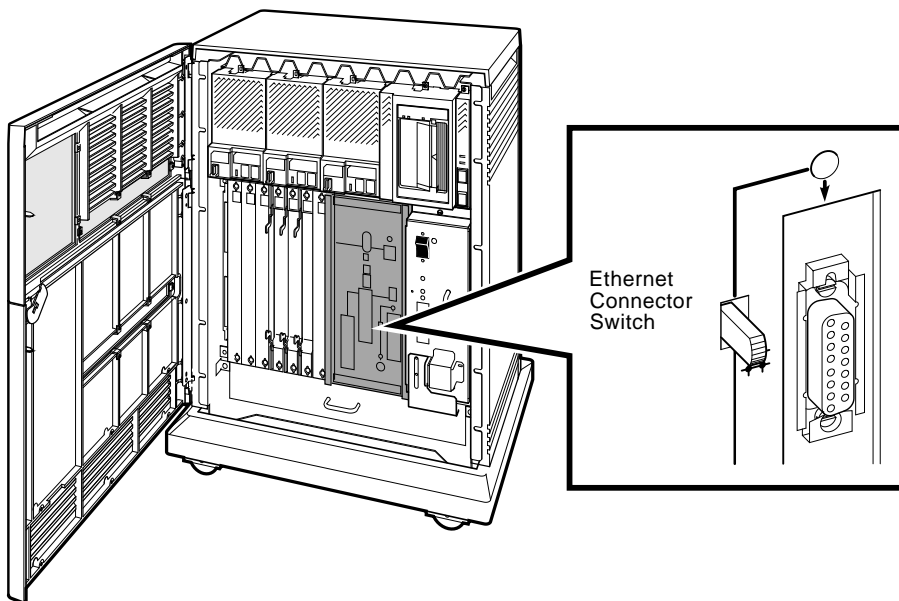
5. Refer to your modem documentation for the location of the modem connector.

To connect a second BC19N-12 cable, repeat the same procedure, except insert the cable into the connector labeled 0-3.

## 7.5 Connecting to an Ethernet Network at the H3604 Console Module

An Ethernet Connector switch on the console module activates a ThinWire or a standard connector. You must select one.

- To select the ThinWire connector, slide the switch down. Then go to Section 7.5.1.
- To select the standard connector, slide the switch up. Then go to Section 7.5.2.

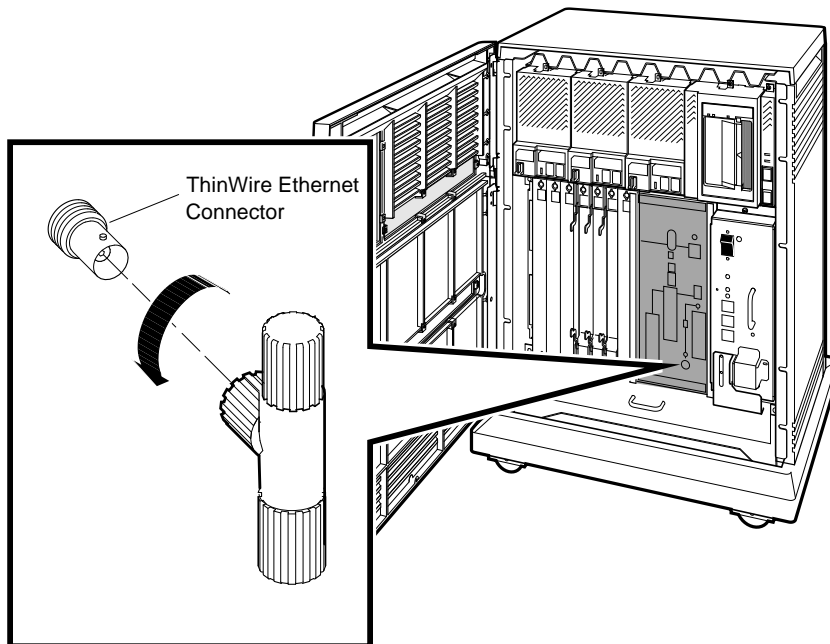


MLO-007183

### 7.5.1 Making a ThinWire Network Connection

Make sure the Ethernet Connector switch is down.

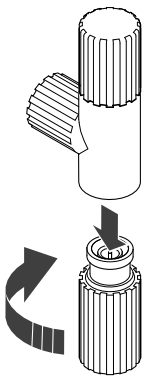
1. Remove the T-connector from the module.



MLO-007138

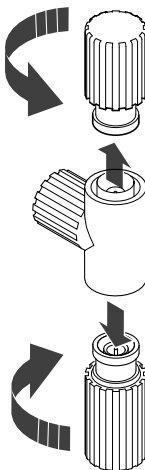
2. Remove one or both terminators from the T-connector.

- If your system is at the end of a network segment (requires one connection to the network):



MLO-007184

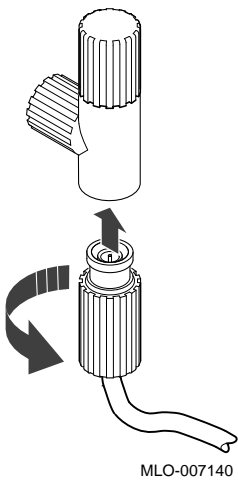
- If your system is between two other network devices (requires two connections to the network):



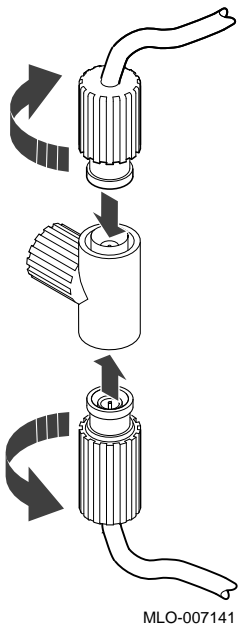
MLO-007139

3. Connect one or two ThinWire cables to the T-connector.

- If your system requires one connection to the network:

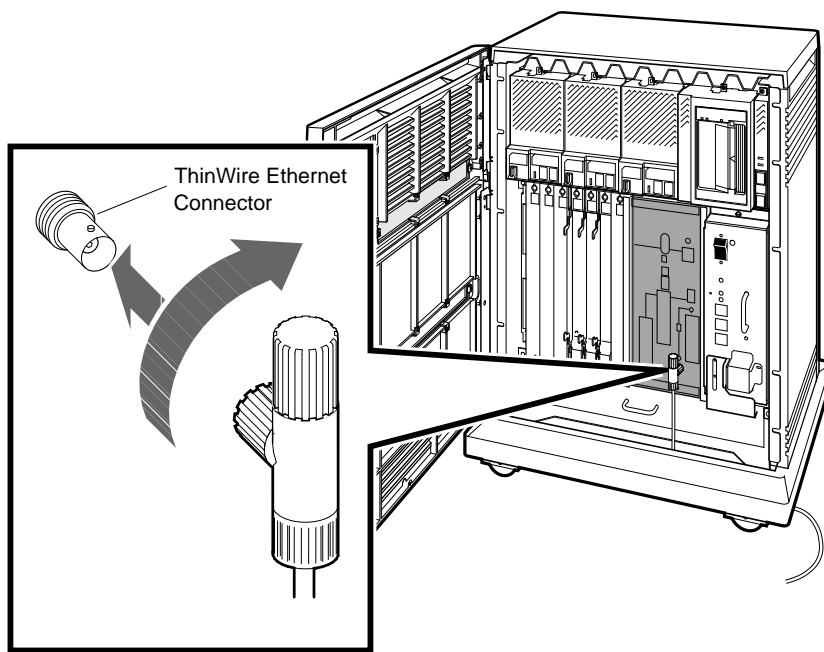


- If your system requires two connections to the network:



4. Insert the T-connector into the ThinWire connector on the module.





MLO-007142

5. Connect the ThinWire cable(s) to one or two of the following ThinWire Ethernet devices, as described in your network documentation.
  - Multiport repeater
  - Singleport repeater
  - Adapter in another system or workstation

---

**Note**

---

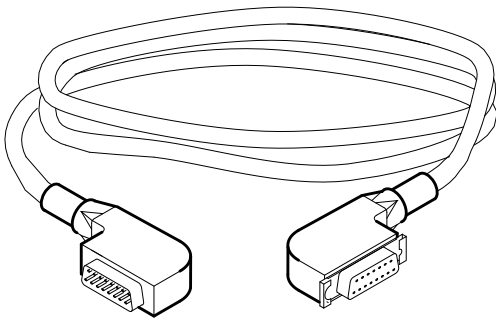
Contact your network manager or Digital service representative if you have questions about network configurations.

---

### 7.5.2 Making a Standard Network Connection

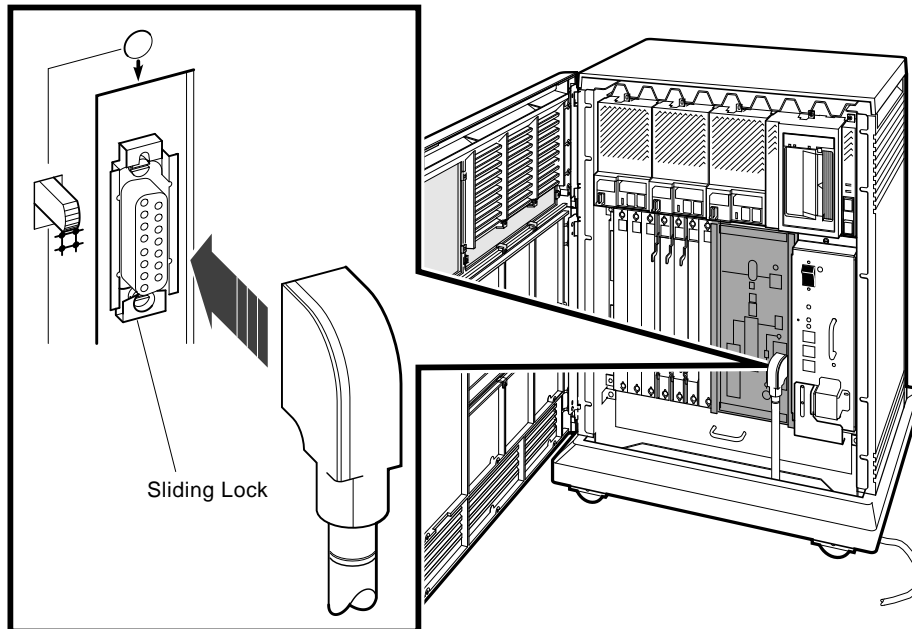
Make sure the Ethernet Connector switch is up.

1. Find the Ethernet transceiver cable.



MLO-007143

2. Make sure the sliding lock on the standard Ethernet connector is in the up position.



MLO-007144

3. Insert the plug end of the cable into the connector.  
Slide the lock down to secure the connection, and make sure the Ethernet Connector switch remains up.

4. Connect the other end of the cable to one of the following devices, as described in your network documentation.
  - Transceiver
  - Interconnect
  - Adapter in another system or workstation

---

**Note**

---

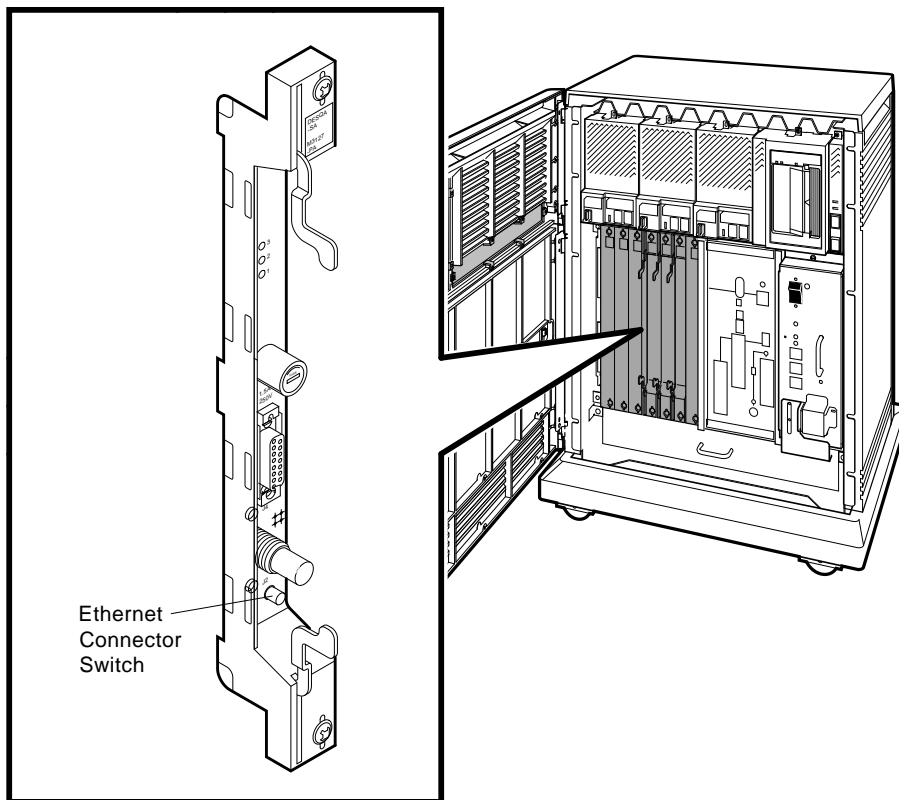
Contact your network manager or Digital service representative if you have questions about network configurations.

---

## 7.6 Connecting to an Ethernet Network at the DESQA Module

An Ethernet Connector switch on the DESQA module activates a ThinWire or a standard connector. You must select one.

- To select the ThinWire connector, set that switch to the out position. Then go to Section 7.6.1.
- To select the standard connector, set that switch to the in position. Then go to Section 7.6.2.

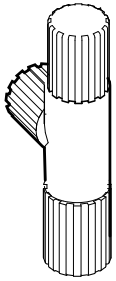


MLO-007145

### 7.6.1 Making a ThinWire Network Connection

Make sure the Ethernet Connector switch is out.

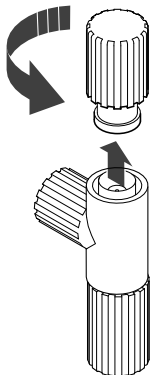
1. Find the ThinWire T-connector and terminators.



MLO-007167

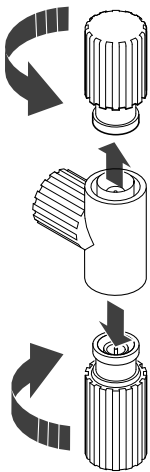
2. Remove one or both terminators from the T-connector.

- If your system is at the end of a network segment (requires one connection to the network):



MLO-007185

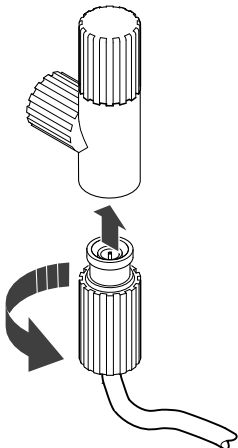
- If your system is between two other network devices (requires two connections to the network):



MLO-007139

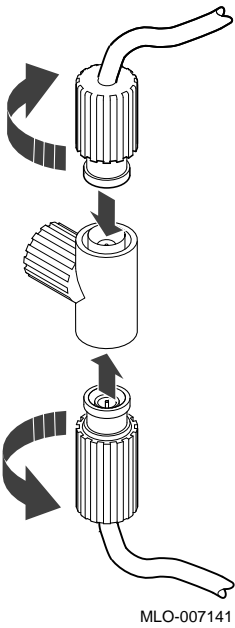
3. Connect one or two ThinWire cables to the T-connector.

- If your system requires one connection to the network:

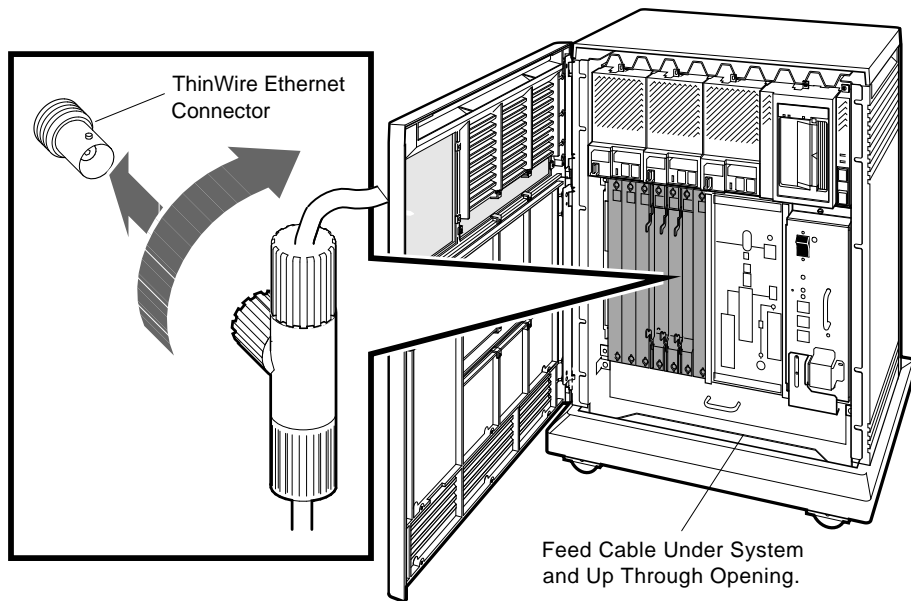


MLO-007140

- If your system requires two connections to the network:



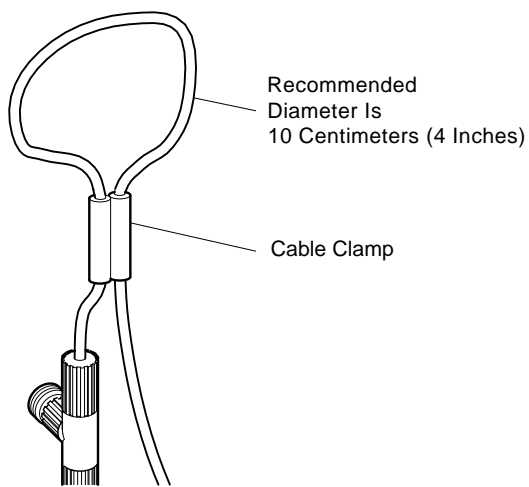
4. Insert the T-connector into the ThinWire connector on the module.



MLO-007147



5. Use the cable clamp shipped with the module to form the upper cable in a loop.



MLO-004020

6. Connect the ThinWire cable(s) to one or two of the following ThinWire Ethernet devices, as described in your network documentation.
- Multiport repeater
  - Singleport repeater
  - Adapter in another system or workstation

---

**Note**

---

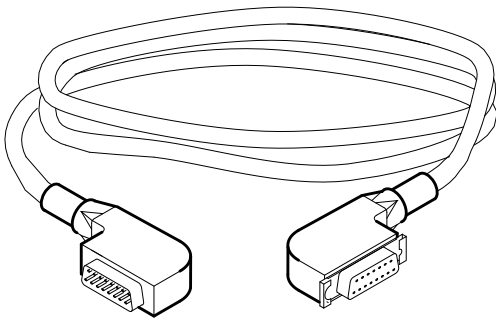
Contact your network manager or Digital service representative if you have questions about network configurations.

---

### 7.6.2 Making a Standard Network Connection

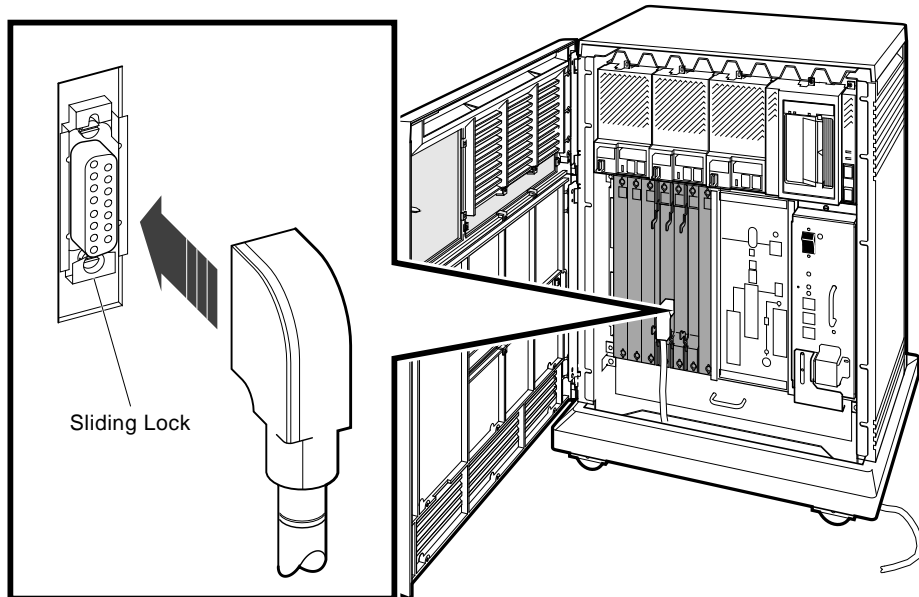
Make sure the Ethernet Connector switch is in.

1. Find the Ethernet transceiver cable.



MLO-007143

2. Make sure the sliding lock on the standard Ethernet connector is in the up position.



MLO-007149

3. Insert the plug end of the cable into the connector.  
Slide the lock down to secure the connection, and make sure the Ethernet Connector switch remains in.
4. Connect the other end of the cable to one of the following devices, as described in your network documentation.
  - Transceiver
  - Interconnect
  - Adapter in another system or workstation

---

**Note**

---

Contact your network manager or Digital service representative if you have questions about network configurations.

---

## 8 Connect an Expander

If you are not installing a factory-configured expander with your system, go to Section 9.

If you are installing a factory-configured expander with your system:

1. Begin the installation of the expander as described in the manual shipped with the expander. Make sure you connect the expander cables that will also be connected to your system.
2. Return to this manual to connect the expander cables to the applicable system connections described in the following sections.

Expander Cable(s)	Expander	Section
Q-bus cables	B400X	8.1
DSSI cable	B400X, R400X, or SF12	8.2
KZQSA external cable	B400X	8.3
Power control bus cable	B400X, R400X, or SF12	8.4
Ground cable	B400X, R400X, or SF12	8.5

---

### Caution

---

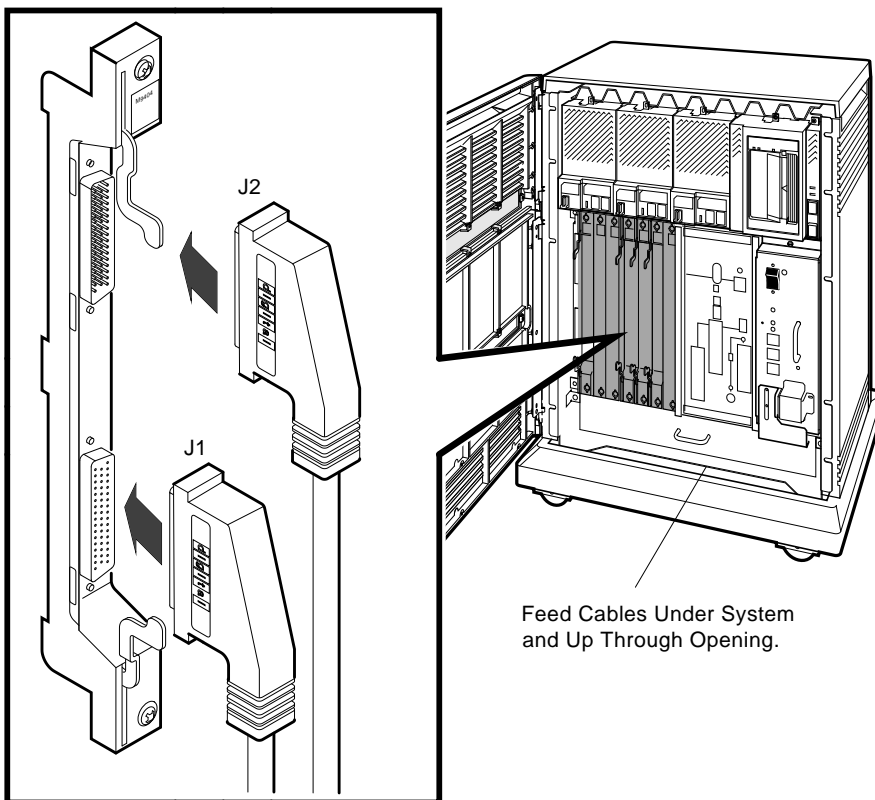
If you are installing a DSSI configuration, to prevent system performance degradation or data corruption caused by excessive ground offset voltages, connect a ground cable between the expander and your system as described in Section 8.5.

---

3. Complete the installation of the expander as described in the expander manual.
4. Complete the installation of your system by completing the procedures remaining in this manual (continue with Section 9).

## 8.1 Connecting the Q-Bus Cables

1. Find the two Q-bus cables labeled BC04V-09. One end of each cable should be connected to the expander.
2. Connect the free ends of those cables to the two Q-bus Out connectors on your system.
  - a. Connect the plug end of one of the cables to connector J1.

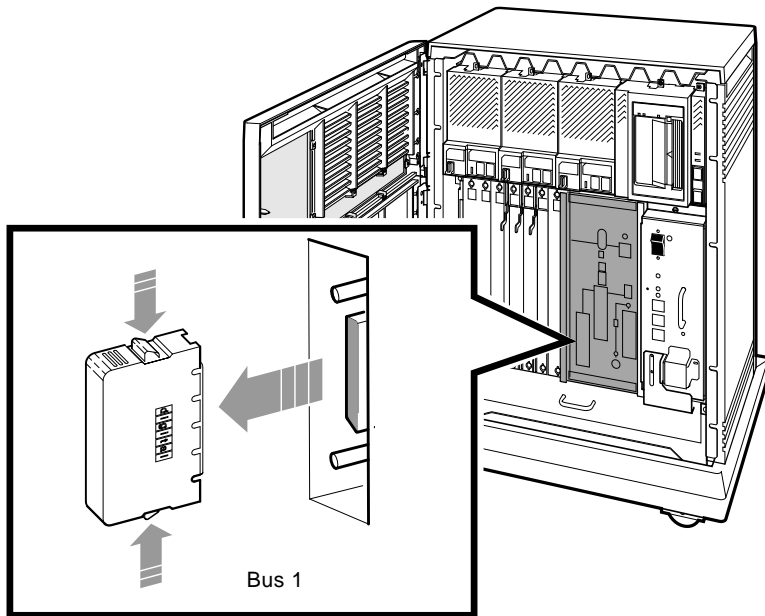


MLO-007131

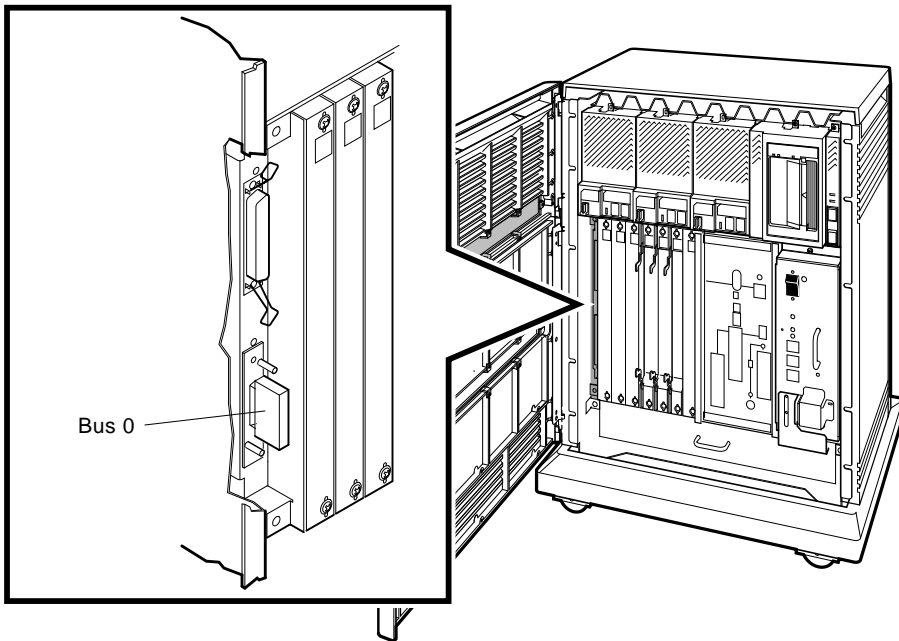
- b. Connect the socket end of the other cable to connector J2.

## 8.2 Connecting the DSSI Cable

1. Find the DSSI cable labeled BC21M-09. One end should be connected to the expander.
2. Remove the terminator from the DSSI In/Out connector labeled Bus 0 or Bus 1.

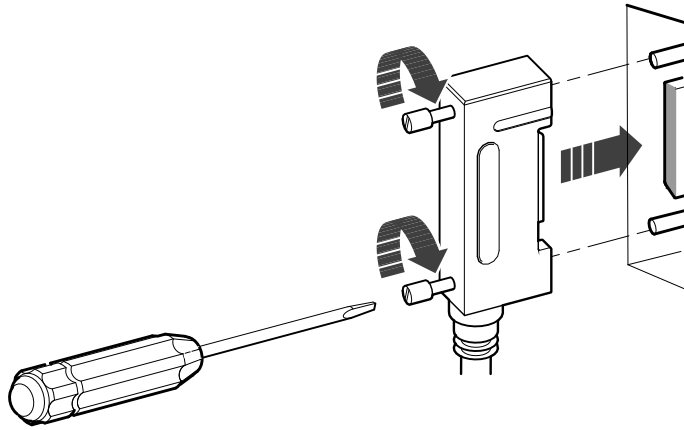


MLO-010216



MLO-010217

3. Connect the free end of the cable to that connector.



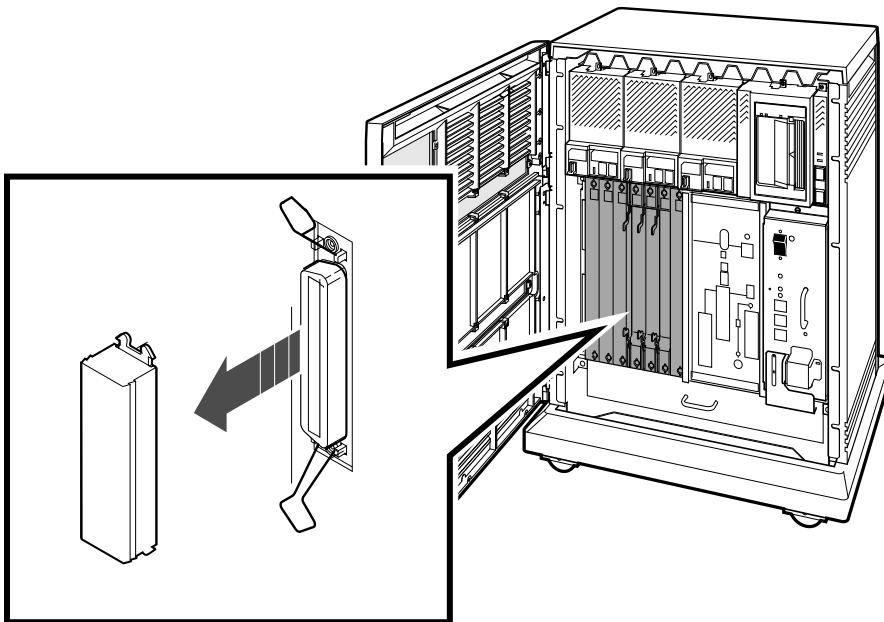
MLO-007160

4. If applicable, install the terminator (removed in step 2) on the expander as shown in the expander installation manual.



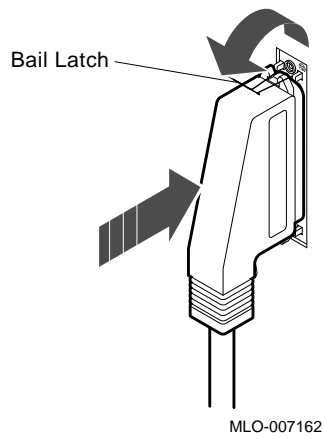
### 8.3 Connecting the KZQSA External Cable

1. Find the KZQSA external cable labeled BC06P-06. One end should be connected to an expander box.
2. Remove the terminator from the lower connector on the KZQSA module.



MLO-007161

3. Connect the free end of the cable to that connector.



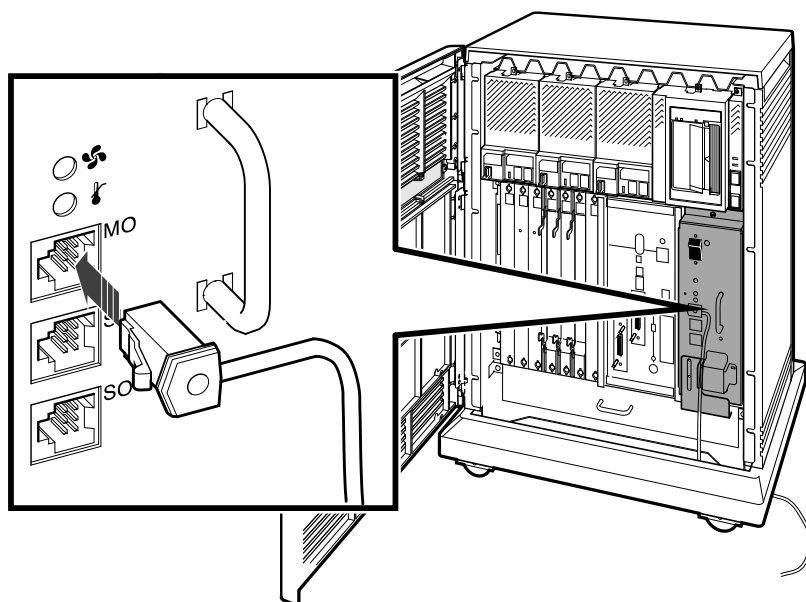
4. If applicable, install the terminator (removed in step 2) on the expander as shown in the expander installation manual.

## 8.4 Connecting the Power Control Bus Cable

### Caution

To maintain system operation, do not use the Power Control Bus cable in a DSSI VAXcluster configuration.

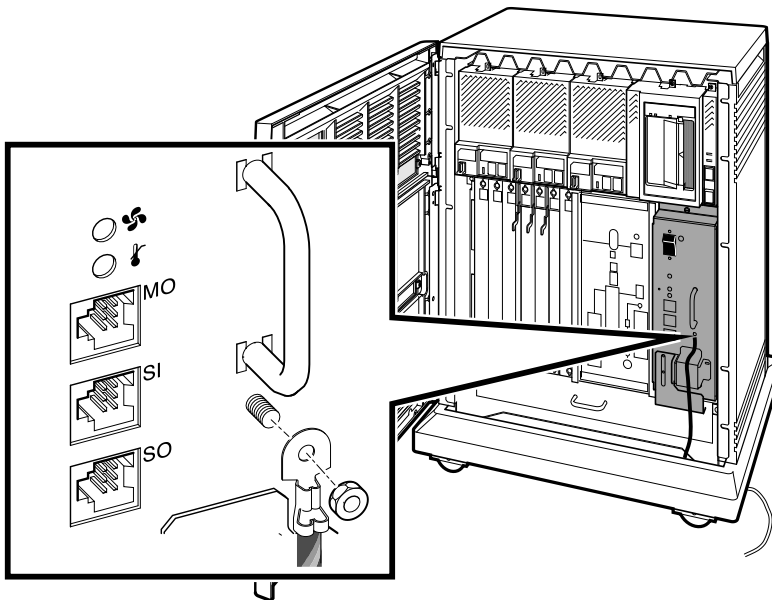
1. Find the Power Control Bus cable labeled 17-02638-01. One end should be connected to the SI connector on the expander.
2. Connect the free end of that cable to the MO connector.



MLO-007163

## 8.5 Connecting the Ground Cable

1. Find the Ground cable labeled 12-13756-A8. One end should be connected to the expander.
2. Connect the free end of that cable to the Ground Wire Out bolt.



MLO-007164

## 9 Connect the System Power Cable

---

### CAUTION

---

Do not connect your computer system to an IT power system (a power system without a directly grounded neutral conductor). To prevent damage, your system should be plugged into a dedicated (isolated) ground circuit.

---

1. Make sure the system Power switch is set to off (0).

2. Make sure all devices connected to your system are turned off.

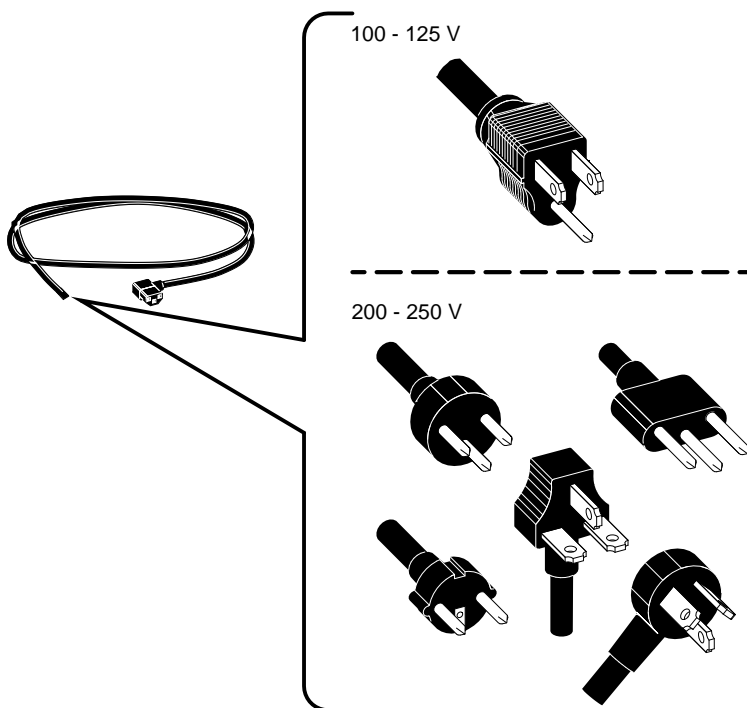
Printer?

External modem?

Console terminal?

Expander?

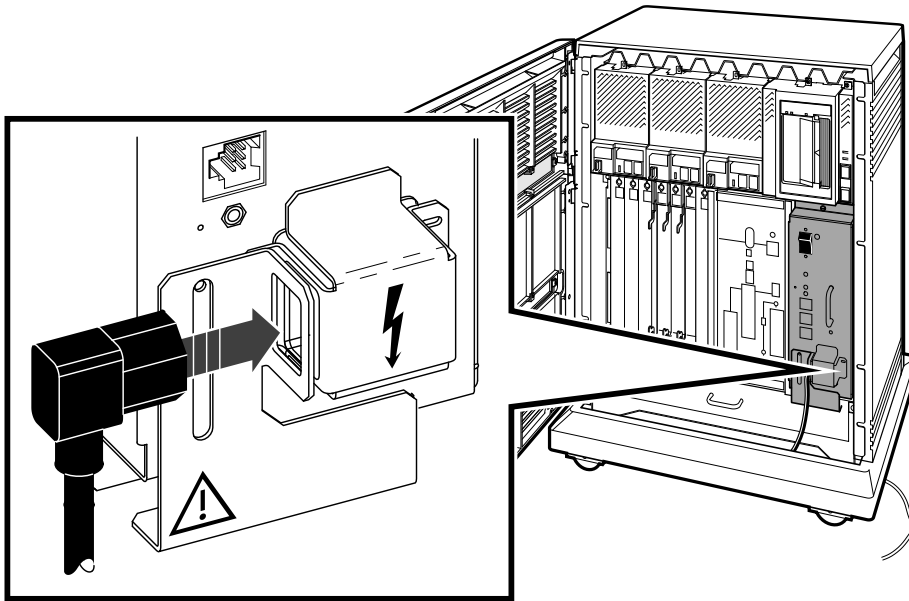
3. Find the power cable shipped with your system.



MLO-007165

4. Make sure the plug end of that cable matches your wall outlet or other power source.

5. Insert the socket end of the cable into the power supply connector.



MLO-007166

6. Insert the plug end of the cable into your wall outlet or other power source.

## 10 Turn On the System and Select a Language

### Caution

Do not operate your system without Digital module covers. They protect the equipment, maintain proper airflow for cooling, and provide EMI-RFI containment that meets international regulatory standards.

1. Turn on your console terminal.  
Wait until the terminal performs its self-tests successfully.
2. If an expander is connected to your system, turn it on.  
Make sure the AC indicator on the expander power supply glows orange. If a Power Control Bus cable is installed, the expander will not power up until the system is turned on.
3. Turn on your system.  
Make sure the AC Present indicator, next to the Power switch, glows orange.

Within a few moments the following language selection menu, or something like it, appears on your console terminal.

---

**Note**

---

If you are using an older terminal that does not support multiple languages, this menu does not appear and the system defaults to English (United States/Canada).

---

```
KA6nn-A Vn.n VMB n.n
1 Dansk
2) Deutsch (Deutschland/Österreich)
3) Deutsch (Schweiz)
4) English (United Kingdom)
5) English (United States/Canada)
6) Español
7) Français (Canada)
8) Français (France/Belgique)
9) Français (Suisse)
10) Italiano
11) Nederlands
12) Norsk
13) Português
14) Suomi
15) Svenska
(1..15): )
```

4. Select a language by typing its number and Return.

---

**Note**

---

If you do not select a language within 30 seconds, the system defaults to English (United States/Canada).

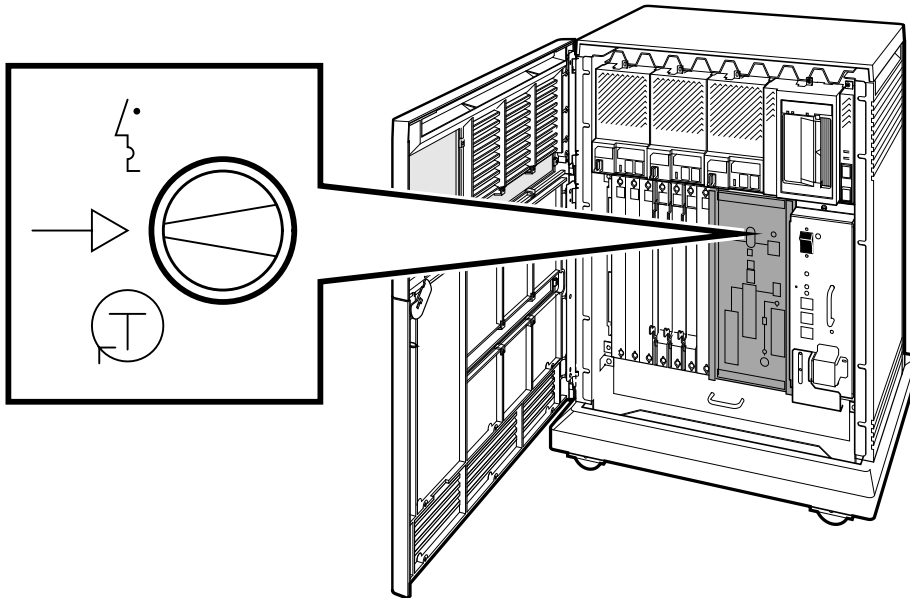
---

Within a few moments the console terminal displays a series of numbers as the system tests itself. This example shows that display after successful testing.

```
KA6nn-A Vn.n, VMB n.n
Performing normal system tests.
66..65..64..63..62..61..60..59..58..57..56..55..54..53..52..51..
50..49..48..47..46..45..44..43..42..41..40..39..38..37..36..35..
34..33..32..31..30..29..28..27..26..25..24..23..22..21..20..19..
18..17..16..15..14..13..12..11..10..09..08..07..06..05..04..03..
Tests completed.
>>>
```

If the self-tests do not complete successfully, refer to your system *Troubleshooting and Diagnostics* manual to find the source of the problem.

5. If the self-tests complete successfully, save the language you selected by turning the Power-Up Mode switch to Run mode.



MLO-004264



## 11 Close the System Doors

---

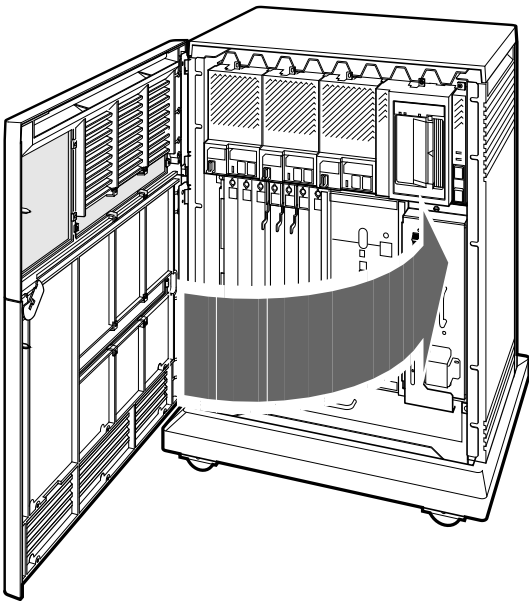
### Note

---

If you plan to run diagnostic software immediately following the installation, leave the upper door open. If you plan to start up factory-installed software immediately following the installation, leave both doors open.

---

1. Push gently at the top right of the upper door and the bottom right of the lower door.



MLO-004030

2. Turn the key to the middle position (both doors locked) or to the top position (upper door unlocked).

The installation is complete. You can now place the system anywhere you want.

## 12 After Installation

1. Read your system *Operation* manual to learn how to use the system. Then make sure the system is turned on and operating normally.
2. If you installed a configuration consisting of two or more enclosures connected by a common DSSI bus, use a voltmeter to make sure the ground offset voltage between any two enclosures does not exceed one of the limits listed below.

---

Total Bus Length	Allowable Ground Offset Voltage	
	DC	AC (rms)
Up to 20 meters (65 feet)	200 millivolts	70 millivolts
20 to 25 meters (65 to 82 feet)	40 millivolts	14 millivolts

---

Total bus length includes all DSSI cable lengths, internal and external. Your *DSSI VMScluster Installation and Troubleshooting* manual tells you how to calculate internal cable lengths.

To measure the ground offset voltage, connect the voltmeter leads to bare (unpainted) metal on each enclosure. If the voltage exceeds one of the limits, call your Digital service representative.

---

### Note

---

The ground offset voltage may vary over time, if equipment is added to your system or plugged into your power outlets. Therefore, this measurement does not guarantee that the voltage will remain within acceptable limits.

---

3. Run the diagnostic software for your system as described in your system *Troubleshooting and Diagnostics* manual.
4. If you have factory-installed software on your system, see the *VMS Factory Installed Software User Guide* for the startup procedure. Otherwise, install the software that you ordered with your system.

---

### Note

---

Systems with VMS factory-installed software have a yellow sticker on the front panel of the ISE containing that software.

---

---

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## Reader's Comments

VAX 4000  
Model 500A/505A/600A/700A/705A  
Installation  
EK-493AB-IN. B01

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Thank you for your assistance.

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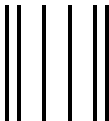
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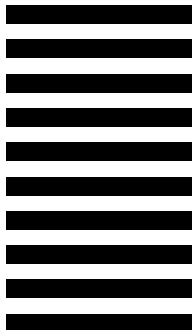
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